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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/820,976
Filing Date: April 08, 2004
Appellant(s): TEMPLETON, JAMES W.

Jeffery C. Hood (Reg. No. 35,198)
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 1/22/08 appealing from the Office action mailed 8/14/07.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

7,049,798	Chapuis et al.	5-2006
7,000,125	Chapuis et al.	2-2006

"The Merriam-Webster Dictionary" Eleventh Edition (Copyright 2007-2008)

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chapuis et al. (U.S. Patent No. 7,049,798 B2) (hereinafter referred to as Chapuis1) (cited by Applicant) in view of Chapuis et al. (U.S. Patent No. 7,000,125 B2) (hereinafter referred to as Chapuis2) (cited by Applicant).

As to claim 1, Chapuis1 discloses a power delivery management system (20), the system comprising: a plurality of digital power management devices (220, 230, 240 and 250), wherein each of the plurality of power management devices comprises a plurality of functions (configuration data from 210), wherein each of the plurality of power management devices is operable to provide power to one or more point of load devices (Though the point of load devices are not explicitly shown, Chapius1 does disclose providing a load to a circuit; column 1, lines 14-37) (column 4, lines 17-30 and column 4, lines 51-67); and a control and communication bus (200), wherein each one of the plurality of digital power management devices is coupled to the control and communication bus (as shown in fig. 2); wherein each respective one of the plurality of digital power management devices includes a controller (310) operable to control the functions of the respective digital power management device (column 5,

lines 13-63); and wherein the plurality of digital power management devices exchange information over the control and communication bus (via controller 210) to exchange (one particular POL regulator can generate clock signal 400 to synchronize other POL regulators by updating data) information to coordinate (synchronize) their functions (column 6, lines 36-52; Fig-4).

Chapuis1 does not explicitly disclose the plurality of digital power management devices are operable to communicate with each other.

Chapius2 teaches a distributed power system of point-of-load regulators (Fig. 3) that comprises a plurality of digital power management devices (column 4, lines 35-57). Furthermore, Chapius2 teaches the plurality of digital power management devices exchange information (POL regulators communicate with each other to synchronize information) and are operable to communicate with each other over the control and communication bus [column 7, lines 21- 29; Fig-3(POL regulators 106, 108, 110 … n are connected through bus)]. Chapius2 further teaches the additional benefit of having lower complexity and smaller size to the overall power system (column 1, lines 47-64).

It would have been obvious to one of ordinary skill of the art having the teachings of Chapuis1 and Chapuis2 at the time the invention was made, to modify power delivery management system of Chapuis1 to include the plurality of digital power management devices are operable to communicate with each other over the control and communication bus as taught by Chapuis2. One of ordinary skill in the art would be motivated to make this combination of having the plurality of digital power management devices operable to communicate with each other over the control and communication bus in view of the teachings of Chapuis2, as doing so

would give the added benefit of having lower complexity and smaller size to the overall power system (as taught by Chapius2 above).

As to claim 2, Chapuis1 in combination with Chapuis2 taught the power delivery management system in claim 1, as shown above. Chapuis2 further teaches the system wherein at least one of the plurality of digital power management devices is also operable to coordinate and/or control the functions of one or more other ones of the plurality of digital power management devices (Chapuis1 discloses the individual converters transferring a single bit to the other converters to synchronize the clocking; column 6, lines 36-52).

As to claim 3, it is directed to the system of steps set forth in claims 1 and 2. Therefore, it is rejected for the same basis as set forth hereinabove.

As to claim 4, Chapuis1 in combination with Chapius2 taught the power delivery management system in claim 1, as shown above. Chapuis2 further teaches the system wherein the plurality of functions comprise one or more power delivery functions (as shown in the list of functions; column 4, lines 53-64); wherein each respective one of the plurality of digital power management devices includes a controller (310) operable to control the one or more power delivery functions of the respective digital power management device (column 5, lines 13-46).

As to claim 5, Chapuis1 in combination with Chapuis2 taught the power delivery management system in claim 1, as shown above. Chapuis2 further teaches the system wherein at least a subset of the plurality of digital power management devices each comprise the same functions (column 4, line 51 thru column 5, line 12).

As to claim 6, Chapuis1 in combination with Chapuis2 taught the power delivery management system in claim 1, as shown above. Chapuis2 further teaches the system wherein one or more of

the plurality of digital power management devices comprises a voltage converter unit (column 4, lines 17-30).

As to claim 7, it is directed to the system of steps set forth in claims 1 and 6. Therefore, it is rejected for the same basis as set forth hereinabove.

As to claim 8, Chapuis1 in combination with Chapuis2 taught the power delivery management system in claim 1, as shown above. Chapuis2 further teaches the system wherein the control and communication bus is a digital bus (column 6, lines 36-52).

As to claims 9-12, they are directed to the system of steps set forth in claim 1 and 8. Therefore, it is rejected for the same basis as set forth hereinabove.

As to claim 13, Chapuis1 in combination with Chapuis2 taught the power delivery management system in claim 1, as shown above. Chapuis2 further teaches the system wherein each individual one of the plurality of digital power management devices is operable to be programmed and/or configured across the control and communication bus (column 4, line 51 thru column 5, line 12).

As to claim 14, Chapuis1 in combination with Chapuis2 taught the power delivery management system in claim 1, as shown above. Chapuis2 further teaches the system wherein two or more of the plurality of digital power management devices are operable to be grouped together in a current sharing configuration (column 5, lines 13-46).

As to Claims 15 and 17, Chapuis1 in combination with Chapuis2 taught the power delivery management system in claim 1, as shown above. Chapuis2 further teaches wherein the two or more of the plurality of digital power management devices grouped in the current sharing configuration [col-5 line: 15 ("grouping POL regulators")] are operable to automatically reconfigure (POL regulators communicate with each other to synchronize information)

themselves in response to a failure of one or more of the two or more of the plurality of digital power management devices grouped in the current sharing configuration [col-5 lines: 13-46 and col-7 lines: 20-28].

As to Claim 16, Chapuis1 teaches wherein plurality of power management devices operable to be automatically identified as a master device (clock signal generating POL regulator) for the current sharing configuration [Chapuis1 col-6 lines: 36-52 (POL regulator generating a clock signal to synchronize other regulators can be see as master device because it is initiating the signal to synchronize other devices].

In the same field of endeavor Chapuis2 teaches one of the two or more of the plurality of digital power management devices (POL regulators) grouped in the current sharing configuration [col-5 lines: 13-20]

As to Claims 18 and 19, Chapuis1 in combination with Chapuis2 taught the power delivery management system in claim 1, as shown above. Chapuis1 further teaches wherein in support of the current-sharing configuration the master device is operable to automatically transmit one or more of:

a respective measured load current (current set point);

a respective measured load voltage (voltage set point); and

respective measured status data (voltage level, slew rate etc.) [col-7 lines: 43-54 (POL control unit uses portion of initial configuration data to determine (control) out put parameter (such as current, voltage etc.); Fig-6(630 and 640)];

As to claim 20, Chapuis1 in combination with Chapuis2 taught the power delivery management system in claim 1, as shown above. Chapuis2 further teaches the system wherein each one of the

plurality of digital power management devices is operable to provide feedback data to all other ones of the plurality of digital power management devices [column 5, lines 24- 63 (142 including monitoring sensor for output voltage/current and other parameter and communicated back to system in order to generate Power Good (PG) output signal)].

As to claim 21, it is directed to the system of steps set forth in claim 1 and 20. Therefore, it is rejected for the same basis as set forth hereinabove.

As to claim 22, Chapuis1 in combination with Chapuis2 taught the power delivery management system in claim 1, as shown above. Chapuis2 further teaches the system wherein the functions of the plurality of digital power management devices comprise at least one of: supply sequencing; phase offset adjustment; current sharing; voltage programming and voltage tracking; and ramp rate control (column 5, line 13 thru column 6, line 20).

As to claims 23 and 24, they are directed to the system of steps set forth in claims 1 and 22. Therefore, it is rejected for the same basis as set forth hereinabove.

As to claim 25, Chapuis1 in combination with Chapius2 taught the power delivery management system in claim 1, as shown above. Chapuis2 further teaches the system wherein the functional features of the plurality of digital power management devices include margining (column 5, line 13 thru column 6, line 20).

As to claim 26, Chapuis1 in combination with Chapuis2 taught the power delivery management system in claim 1, as shown above. Chapuis2 further teaches the system wherein the functional features of the plurality of digital power management devices include voltage supply sequencing (column 5, line 13 thru column 6, line 20).

As to claim 27, Chapuis1 in combination with Chapuis2 taught the power delivery management system in claim 1, as shown above. Chapuis2 further teaches the system further comprising at least one master control device (210) coupled to the control and communication bus, wherein the at least one master control device is operable to centrally control the plurality of digital power management devices to implement advanced features (column 4, line 17 thru column 5, line 12).

As to claims 28, 29 and 35-39, they are directed to the system of steps set forth in claims 1 and 27. Therefore, it is rejected for the same basis as set forth hereinabove.

As to claim 30, Chapuis1 in combination with Chapuis2 taught the power delivery management system in claim 1, as shown above. Chapuis2 further teaches the system wherein each one of the plurality of digital power management devices is operable to automatically self- test [column 5, lines: 43-49 (POL regulator 106 uses default configuration when it detects there is no programming signals received through serial interface is self-test)].

As to claim 31, Chapuis1 in combination with Chapuis2 taught the power delivery management system in claim 1, as shown above. Chapuis2 further teaches the system wherein each one of the plurality of digital power management devices is operable to auto-calibrate [column 5, lines: 43-49 (implying default configuration in absence of programming signals in order operate in safe condition is calibrating/adjusting its settings to a default value)].

As to claim 32, Chapuis1 in combination with Chapuis2 taught the power delivery management system in claim 1, as shown above. Chapuis2 further teaches the system wherein the power delivery management system is comprised on a printed circuit board; wherein each of the plurality of digital power management devices is distributed on the printed circuit board (column 4, lines 31-50).

As to claim 33, Chapuis1 in combination with Chapuis2 taught the power delivery management system in claim 1, as shown above. Chapuis2 further teaches the system wherein each of the plurality of digital power management devices comprises an integrated circuit (column 4, lines 31-50).

As to claim 34, Chapuis1 in combination with Chapuis2 taught the power delivery management system in claim 1, as shown above. Chapuis2 further teaches the system wherein the control and communication bus is a serial bus (column 6, lines 36-52).

(10) Response to Argument

Appellant's arguments filed 1/22/08 regarding the rejection to **Claim 1** as being unpatentable over Chapuis1 in view of Chapuis2 have been fully considered but it is not persuasive.

Appellants argue that "… "coordinating functions" as recited in claim 1 is not synonymous with the "synchronizing" disclosed in Chapuis2 and Chapuis1". The examiner disagrees. First of all the definition of "coordinating" is to work or act together harmoniously as evidenced by dictionary definition provided by the examiner. Second of all, Chapuis1 teaches a clock signal 400 synchronize various communicating devices (i.e. POL regulators and controller) and creates a series of clock cycles 410 each including data bit 420. This allows various communicating device to transmit a single bit data for every clock cycle [See, Chapuis1, col-6 lines: 36-52]. In other words each communicating device transmits data (function) to work together harmoniously. Therefore the argument is not persuasive.

Appellants further argue that "… "coordinating functions" to pertain to organization and/or arbitration of the functions of the interoperating and/or communicating power

management devices with respect to each other. In other words, a capability of the power management devices to coordinate their functions is indicative of the ability of a power management device to perform its functions not only independently of the other power management devices, but also informed and/or directed by how other power management devices perform their own respective functions". However, the meaning of "coordinating function" as described above is not claimed (emphasis added).

Appellants further argue that "… "coordinating functions" (recited in claim 1) to be synonymous with "synchronizing devices" … is not only incorrect in the context of the art of record, it is also not supported in either the Present Application or in Chapuis1 and/or in Chapuis2". The examiner disagrees. The reason as set forth above equally applies in response to this argument.

Appellants further argue that "… the POL regulators disclosed in Chapuis1 and Chapuis2, (whether taking each reference singly or in combination) are **not** exchanging information (e.g. cycles and a data bit) with each other either directly or via the controller (210)". The examiner disagrees. The definition of "Exchange" is to substitute one thing for another as it can be evidenced by the definition provided by the examiner. Chapuis1 teaches clock signal 400 can be generated by a particular POL regulator (emphasis added) and clock signal 400 synchronizes various communication devices (i.e. other POL regulators) [Chapuis1, col-6 lines: 36-40]. It is well known in the art to synchronize data between devices to update data/information. Update data/information thus in fact "Exchange" in light of the dictionary definition. It is also admitted by the Appellant that "synchronize data transfer" refers to data being transfer between devices (see Page-5 Para-3). Therefore, Chapuis1 teaches POL regulators

are exchanging information. Furthermore Chapuis2 teaches "POL regulators communicate with each other … to synchronize information …" [Chapuis2, col-7 lines: 20-27]. Therefore, Chapius2 also teaches POL regulators exchange information.

Appellants further argue that "Appellant finds no support in Chapuis1 and/or Chapuis2, taken singly or in combination, for information being sent by one POL regulator directly to another POL regulator, or for information being sent by one POL regulator to the central controller, and the central controller relaying that information to any of the other POL regulators". The examiner disagrees. First of all the argued feature is not claimed. Second of all, the examiner already established the fact that the POL regulators exchange information.

Appellants further argue that "Chapuis1 is silent on the concept of the POL regulators exchanging information to coordinate their functions". The examiner disagrees. Chapius1 and Chapuis2 both teach the argued feature as stated above.

Appellants further argue that "… claim 1 recites a plurality of digital power management devices that are operable to communicate with each other over the control and communication bus to exchange information to coordinate their functions. It is clear from Chapuis2 that the current share interface is distinct and different from the control and communication bus …". However, the argued feature of "control and communication bus" is taught by Chapuis1 [Fig-2(200)].

Appellant's arguments filed 1/22/08 regarding the rejection to **Claims 2** and **3**as being unpatentable over Chapuis1 in view of Chapuis2 have been fully considered but it is not persuasive.

Appellants argue that "Consequentially, neither Chapuis1 nor Chapuis2 teach, suggest, or provide motivation for a system in which at least one of a plurality of power management devices is operable to control the functions of one or more other ones of the plurality of power management devices". The examiner disagrees. The definition of "Exchange" is to substitute one thing for another. Chapuis1 teaches clock signal 400 can be generated by a particular POL regulator (emphasis added) and clock signal 400 synchronizes various communication devices (i.e. other POL regulators) [Chapuis1, col-6 lines: 36-40]. It is well known in the art to synchronize data between devices to update data/information. Update data/information thus in fact "Exchange" in light of the dictionary definition. It is also admitted by the Appellant that "synchronize data transfer" refers to data being transfer between devices (see Page-5 Para-3). Therefore, Chapuis1 teaches POL regulators are exchanging information.

Appellant's arguments filed 1/22/08 regarding the rejection to **Claim 15** as being unpatentable over Chapuis1 in view of Chapuis2 have been fully considered but it is not persuasive.

Appellants argue that "Consequently, there is no teaching, suggestion, and/or motivation in either Chapuis1 or Chapuis2 for two or more of a plurality of digital power management devices grouped in a current sharing configuration …". The examiner disagrees. Chapuis2 teaches the argued feature of power management devices grouped together [col-5 lines: 13-46] and reconfigure themselves in response to a failure of one or more of the two or more of the plurality of digital power management devices grouped in the current sharing configuration through communicating with each other [col-7 lines: 20-28].

Appellant's arguments filed 1/22/08 regarding the rejection to **Claim 16** as being unpatentable over Chapuis1 in view of Chapuis2 have been fully considered but it is not persuasive.

Appellants argue that "Chapuis1 and Chapuis2 fail to disclose or suggest one of two or more of a plurality of digital power management devices grouped in a current sharing configuration being operable to be automatically identified as a master device for the current sharing configuration". The examiner disagrees. Chapuis2 teaches current sharing configuration. Chapuis1 teaches a clock signal 400 can be generated by a particular POL regulator to synchronize various communication devices (i.e. other POL regulators) and creates a series of clock cycles 410 each including data bit 420. This allows various communicating device to transmit a single bit data for every clock cycle [See, Chapuis1, col-6 lines: 36-52]. In other words clock signal 400 initiating POL regulator can be seen as a master device because it is synchronizing other POL regulators with its clock signal and updating with data. Therefore the argument is not persuasive.

Appellant's arguments filed 1/22/08 regarding the rejection to **Claims 17-19** as being unpatentable over Chapuis1 in view of Chapuis2 have been fully considered but it is not persuasive.

Appellants argue that "Chapuis1 Chapuis2 fail to disclose or suggest a POL regulator that is automatically identified as a master device for a current sharing configuration, and this master device automatically reconfiguring the current sharing configuration in response to a failure of one or more of the two or more of the plurality of digital power management devices grouped in the current sharing configuration". The examiner disagrees. The examiner already established

how POL regulator automatically identifies as master device and reason given above fully applies in respond to this argument as well.

Appellant's arguments filed 1/22/08 regarding the rejection to **Claims 20** and **23-24** as being unpatentable over Chapuis1 in view of Chapuis2 have been fully considered but it is not persuasive.

Appellants argue that "Consequently, there is no teaching or suggestion in Chapuis1 and/or Chapuis2 for each of the plurality of digital power management devices providing feedback data to all other ones of the plurality of digital power management devices". The examiner disagrees. Chapuis2 teaches POL regulators communicate with each other to synchronize information [col-7 lines: 20-27]. Chapuis2 further teaches power conversion circuit 142 (Fig-3) has a monitoring sensor for output voltage, current and other parameter for local control and communicated back to system in order to generate a Power Good (PG) out put signal [col-5 lines: 24-63]. Therefore, Chapuis2 teaches the argued feature.

Appellant's arguments filed 1/22/08 regarding the rejection to **Claims 30-31** as being unpatentable over Chapius1 in view of Chapius2 have been fully considered but it is not persuasive.

Appellants argue that "Chapuis1 and Chapuis2 do not disclose the POL regulators automatically self-testing and/or auto-calibrating". The examiner disagrees. The dictionary definition of "calibration" is to adjust. Chapuis2 teaches a default configuration memory 148 included in POL regulator 106 (Fig-4) stores default configuration (i.e. voltage, current, temperature and other parameters) and will imply the default configuration in case there is no programming signals are received in order operate in safe condition [col-5 lines: 43-49]. The

POL regulator 106 is indeed calibrating/adjusting its settings to a default value and therefore teaches the argued feature.

On the other hand POL regulator 106 uses default configuration when it detects there is no programming signals received through serial interface or hardware interface. This is a self-test process (detection of receiving programming signal) which is followed by an action. Therefore, Chapuis2 teaches the argued feature of "self-testing and/or auto-calibrating". Therefore the argument is not persuasive.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Mohammed H. Rehman/

Examiner, Art Unit 2116

Conferees:

/Rehana Perveen/

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Supervisory Patent Examiner, TC 2100